UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/006,752	11/08/2001	Yee Loy Lam	774-010704-US(PAR)	2535

2512 7590 03/03/2003

PERMAN & GREEN
425 POST ROAD
FAIRFIELD, CT 06824

EXAMINER	
PETKOVSEK, DANIEL J	

ART UNIT	PAPER NUMBER
2874	

DATE MAILED: 03/03/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/006,752	LAM ET AL.	
	Examiner	Art Unit	
	Daniel J Petkovsek	2874	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____ .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-12 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1,2 and 6-12 is/are rejected.

7)☒ Claim(s) 3-5 is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on 11/08/2001 is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 7 .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

Brian Healy
Primary Examiner

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Information Disclosure Statement

2. The prior art documents submitted by Applicant in the Information Disclosure Statements filed on October 7, 2002, have been considered and made of record (note attached copy of forms PTO-1449).

Inventorship

3. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claim Objections

4. Claim 3 is objected to because of the following informalities: the claim states, "dimensioned so as to cause light *preferentially* to couple". This statement does not clearly define the invention. Please remove "preferentially". Appropriate correction is required.

Allowable Subject Matter

5. Claims 3-5 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The pertinent prior art does not teach or reasonably suggest that the spot-size converter comprises a pair of waveguides dimensioned as to cause light to couple from one waveguide to the other as the light propagates along the length of the waveguide. The prior art does not further teach that the upper waveguide of the spot-size converter has a reducing tapered shape and the lower waveguide of the spot-size converter has a non-tapered shape.

Claim Rejections - 35 USC § 112

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claim 12 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite in that it fails to point out what is included or excluded by the claim language. This claim is an omnibus type claim.

Claim Rejections - 35 USC § 102

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in-
> (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effect under this subsection of a national application published under section 122(b) only if the international application designating the United States was published under Article 21(2)(a) of such treaty in the English language; or

> (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that a patent shall not be deemed filed in the United States for the purposes of this subsection based on the filing of an international application filed under the treaty defined in section 351(a).

9. Claims 1-2, and 6-10 are rejected under 35 U.S.C. 102(e) as being anticipated by Kawamoto et al. U.S.P. No. 6,289,157.

Kawamoto et al. U.S.P. No. 6,289,157 teaches (Fig 6, column 9 line 37 through column 10 line 38) an optical transmission module for coupling light between an optical device and an optical fiber comprising: an integral optical spot size converter 101 formed on an Si substrate 55, a alignment means for aligning the initially separate (see soldering connection) of optical element 102, for light to be coupled from optical element 102 through spot-size converter 101 to aligned optical fibers 103 on substrate 104 in V-groove type alignment channels. Regarding claims 6-10, see alignment features and properties of the optical device of Kawamoto et al. '157.

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

11. Claims 1, 2, 6, 7, and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ambrosy et al. US 2002/0031306 A1.

Ambrosy et al. US 2002/0031306 A1 teaches (ABS, Fig. 1, 2a, 2b) an optical module 1 for coupling light between an optical device 2 and an optical fiber 4 comprising: an integral spot-size converter placed between the device 2 and fiber 4 for efficient coupling and alignment of the

optical signal. Device 2 is aligned with the integrated spot-size converter and light is coupled through them and to the aligned optical fiber. Ambrosy et al. '306 does not explicitly teach how the devices are aligned, but it would have been obvious at the time the invention was made to a person having ordinary skill in the art that the following must be done for efficient/correct coupling: an alignment means for aligning to optical device to the spot-size converter, and an alignment means for aligning the spot-size converter to the optical fiber. Regarding the limitation that the device is initially separate, the optical module 1 functions to couple light while the device is stationary and attached. This limitation does not affect the functionality of the optical coupling, as the optical device could initially be separate the entire block. Regarding claim 2, the substrate is formed with a silicon material. Regarding claim 6, 7, and 10 the optical device must be aligned and keyed for proper coupling functionality of the apparatus of Ambrosy et al. '306.

12. Claims 1, 2, 6, 7, and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over NPL (PTO-892 reference U) to Mitomi et al.

Mitomi et al. teach an optical apparatus for creating low-loss coupling between an optical semiconductor device, such as a laser diode, and an optical fiber. Mitomi et al. use an integrated spot-size converter with a tapered small-core waveguide. Mitomi et al. do not explicitly teach how the devices are aligned, but it would have been obvious at the time the invention was made to a person having ordinary skill in the art that the following must be done for correct coupling: an alignment means for aligning to optical device to the spot-size converter, and an alignment means for aligning the spot-size converter to the optical fiber. Regarding the limitation that the device is initially separate, the optical apparatus functions to couple light while the device is

stationary and attached. This limitation does not affect the functionality of the optical coupling. Regarding claim 2, it is obvious that the substrate could be formed with a silicon type material. Regarding claim 6, 7, and 10 the optical device must be aligned and keyed for proper coupling functionality of the apparatus of Mitomi et al.

13. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kawamoto et al. U.S.P. No. 6,289,157.

Kawamoto et al. U.S.P. No. 6,289,157 teaches (Fig 6, column 9 line 37 through column 10 line 38) an optical transmission module for coupling light between an optical device and an optical fiber comprising: an integral optical spot size converter 101 formed on an Si substrate 55, a alignment means for aligning the initially separate (see soldering connection) of optical element 102, for light to be coupled from optical element 102 through spot-size converter 101 to aligned optical fibers 103 on substrate 104 in V-groove type alignment channels. Kawamoto et al. '157 does not explicitly teach that the optical device is a semi-conductor edge emitting waveguide device. Since semi-conductor edge emitting waveguides are well known optical elements in the art, it would have been obvious to combine any emitting waveguiding device to the alignment apparatus of Kawamoto et al. '157 for efficient coupling of an optical device to an optical fiber.

Conclusion

14. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure, with respect to the state of the art of optical fiber to optical device alignment using spot-size converters: PTO-892 references A, C, E, F, V, and W.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Daniel J Petkovsek whose telephone number is (703) 305-6919. The examiner can normally be reached on M-F 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rodney Bovernick can be reached on (703) 308-4819. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9318 for regular communications and (703) 872-9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 872-9321.

Daniel Petkovsek
February 24, 2003

Brian Healy
Primary Examiner